**Geography and CRP Major Assessment Report 2017-18**

Please download this document and provide a response to each question in the appropriate section. Send your assessment reports to the Director of Assessment, Dr. Melissa Jordine ([mjordine@csufresno.edu](mailto:mjordine@csufresno.edu)). (Reports can be sent to Dr. Jordine via campus mail to mailstop SS 21). Please complete a separate report for each B.A/B.S. and M.A/M.S. program offered by the department.

|  |
| --- |
| 1. **What learning outcome(s) did you assess this year?** List all program outcomes you assessed (if you assessed an outcome not listed on your department SOAP please indicate explain). Do not describe the measures or benchmarks in this section. Also please only describe major assessment activities in this report. No GE assessment was required for the 2017-2018 academic year.   SLO: Students will explain and critically evaluate how human activities modify physical and biotic environments. |
| 1. **What assignment or survey did you use to assess the outcomes and what method (criteria or rubric) did you use to evaluate the assignment?** If the assignment (activity, survey, etc.) does not correspond to the activities indicated in the timeline on the SOAP, please indicate why. Please clearly indicate how the assignment/survey is able to measure a specific outcome. If after evaluating the assessment you concluded that the measure was not clearly aligned or did not adequately measure the outcome please discuss this in your report. Please include the benchmark or standard for student performance in your assessment report (if it is stated in your SOAP then this information can just be copied into the report). An example of an expectation or standard would be “On outcome 2.3 we expected at least 80% of students to achieve a score of 3 or above on the rubric.”   Three out of the total of five homework assignments in Geography 184: Environmental Planning offered at the department in Spring 2018 were used to assess the students learning outcomes. The first assignment was about the problem of soil erosion. In this assignment, students first computed the erodibility index of the Science I building at Fresno State to see if soil erosion is a potential problem. Then, they compared two control treatments of soil erosion by calculating possible soil losses under these two treatments. In the second assignment, a hydraulic equation was used to calculate water contamination scores for different sites under two land uses. Two different sets of weights were used in the computations for basic use and agricultural use. Students were also asked to comment on the usefulness of this approach and to recommend other solutions to help control water contamination. The third assignment was about to compare and comment three different flooding mitigation options for two cities located respectively upstream and downstream of a river. Students were required to provide two “pros” and two “cons” for each of the three options. They were also required to provide other possible solutions, using the knowledge learned in the class. A score of 8 was assigned to each of the three homework assignments. As per the department’s direct assessment measures outlined in the SOAP, students needed to earn a grade of C or better, to meet the outcome. Therefore, a score of 5.6 for each assignment was seen as the standard to meet the outcome. |
| 1. **What did you discover from the data?** Discuss the student performance in relation to your standards or expectations. Be sure to clearly indicate how many students did (or did not) meet the standard for each outcome measured. Where possible, indicate the relative strengths and weaknesses in student performance on the outcome(s).   The expectation for these assignments was that a large majority of the students would earn a grade of C or better (5.6 points or higher). For the first assignment, 11 out of 14 students received a score of 7 or 8, one student received a score of 4 due to a late submission, and two students did not turn in their homework.  The second assignment was more complex because of a complicated process required for calculating water contamination scores. A total of 7 out of 14 students received a score that is larger than 5.6 (equivalent of C), while the other 7 students received a score below that. Among those 7 students who earned a grade below a C, one student did not turn in the assignment.  In the third assignment, 9 out of 14 students received a grade that is higher than 5.6 points. Two students who received 5 points due to a late submission. Two students who also received 5 points did not answer the questions as asked that they needed to provide at least two “pros” and two “cons” for each of the three mitigation options. One student did not turn in the assignment.  The three homework assignments, together with the other two required for the course, account for 40% (8 points per homework or 40 points) of the final grade (100 points). Students who earned a higher grade in the assignments seem to better understand how to apply appropriate analytical or planning tools to assess the impacts of human activities has had on the natural environment, and those who did not do so well on the assignments were not as proficient in the subject matter.  In the final exam, 11 out of 14 students received a grade which is better than a C (17.5 points or higher out of 25 points). Actually, 5 of them earned a grade of A in their final exam. Two of the students, who received a C in the final, did not perform well in the homework assignments and even did not come to see the instructor during the office hours. The other one student with a grade of C in the Final failed to provide detailed information for the answers in the exam. This implies that the students who deemed proficient or did well on the homework assignments received higher final grades in the course and the students who were not deemed proficient on the more complex assignments did not receive higher final grades in the course as expected. |
| 1. **What changes did you make as a result of the data?** Describe how the information from the assessment activity was reviewed and what action was taken based on the analysis of the assessment data.   The purpose of these homework assignments is to prepare students for the final exam because the questions in the final exam would be similar to those in the homework assignments. The final exam results would be more important for assessing if students meet the SLO. From the results of the final exam, 79% (11 out of 14) of the students performed well in their final exam, indicating that they fully understood the questions and knew how to respond them. |
| 1. **What assessment activities will you be conducting in the 2018-2019 AY?** List the outcomes and measures or assessment activities you will use to evaluate them. These activities should be the same as those indicated on your current SOAP timeline; if they are not please explain.   The course GEOG 184 will be offered as a GE course in the area ID in Fall 2019. The instructor will likely assess the homework assignments in a similar fashion because this course will be taught the first time as a GE course. |
| 1. **What progress have you made on items from your last program review action plan?** Please provide a brief description of progress made on each item listed in the action plan. If no progress has been made on an action item, simply state “no progress.”   Action #1: SOAP  We have greatly improved our SOAP each year since the last program review. In fact, at one point our SOAP was the most complete in the college. We have done an alumni survey every three years.  Action #2: Curriculum Review  The Review Team recommended to the department to modify its curriculum by eliminating the “Major Areas of Concentration” and replacing them with a set of required Upper Division Core courses. We have created Upper Division Core courses for our new City & Regional Planning option. While we do not have an Upper Division Core for our Geography major, we have simplified the curriculum such that students now take one course from each area of concentration.  Action taken: Also, the department revised its degree program so that there are six essential core courses that are taken by majors:  GEOG 2. Introduction to Cultural Geography  GEOG 4. World Geography  GEOG 5. Physical Geography: Global Concepts, Weather and Climate  GEOG 7. Physical Geography: The Earth's Surface  GEOG 30. Introduction to Spatial Statistics  GEOG 141. GIS I: Data Display and Manipulation  And, any 18 units of geography, or city & regional planning (CRP) courses; with the stipulation that at least twelve (12) units be upper-division. The number of units in the major was also reduced from 42 to 36.  The new degree program, BS in City and Regional Planning has been deployed, however, the program is currently being revised to better address the needs of valley students, and potential local employers. The current program includes major requirements of 42 units, additional requirements of 22 units, and electives of 18-21 units for a total of 82 to 85 units, plus GE requirements, university requirements, and other units required to satisfy the 120 units for a bachelor’s degree. The revised program will be 36 units, in addition to GE requirements, university requirements, and other units required to satisfy the 120 units for a bachelor’s degree.  Action #3:  Increase the number of majors  The Review Team recommended that the department find creative ways for maintaining the FTES at the same time that it increases the number of majors. The Team also stated that “a structural shift away from spending high quality and scarce resources on G.E. courses than spending them on majors is needed to improve and grow the undergraduate program, and ultimately reinstate a master’s program. Increasing majors has still been a struggle, however we hope our increased efforts in the area of planning will bring new interest to the department.  In the meantime, we continue to:  • Participate in university outreach events  Action taken: Many of the faculty have participated in ‘Preview Days’ and ‘Dog Days’ activities.  • Renew contacts with the local community colleges  Action taken: Jon McPhee, Geography Instructor and Department Chair of Social Sciences for Clovis Community College (CCC), is now a member of the department’s advisory board, and is providing a connection between the department and CCC. Sean Boyd, a former lecturer in the department, is now a full-time Geography Instructor at Fresno City College (FCC) and can provide a connection between this department and that campus.  • Organize our Geography Forum Lecture Series  Action taken: None.  • Explore the possibility of making a recruitment video  Action taken: None  • Complete the ongoing modernization of the department website  Action taken: The revision has been done, and is currently ongoing.  • Organize community events for Geography Awareness Week  Action taken: None.  • Enforce all university and department mandatory advising schedules to keep students on track 4  Action taken: Except for career advising, Faculty are no longer directly advising majors with regard to their programs. All program advising is done in the COSS Advising Center.  • Serve as the home base for the National Geographic Bee  Action taken: The department continues to be the ‘home base’ for the California State Geographic Bee.  The cancellation of major courses with enrollments that exceed ten (10) students places an unnecessary burden upon our majors. Such cancellations make it exceedingly difficult to grow a program due to a lack of student confidence in being able to graduate in a timely manner.  Action #4: Strengthen Research  The faculty is very active in many research areas including air quality, recreational planning, archaeological explorations, waste management, water quality, environmental policy analysis, health and diseases, mosquito abatement, and international business. Much of the research addresses concerns in Fresno, as well as other cities in the San Joaquin Valley. The faculty plans to continue to engage in research that will benefit the community in many ways.  Action #5:  Expand Program by adding more Minors. In addition to our minor in Geography and our minor in Urban Studies, we now also have a minor in Meteorology, a certificate in Geographic Information Systems, and an option in City & Regional Planning.  Action taken: Although the department has been informed that we may not create any minors until further notice, we have created a Certificate of Special Study in Broadcast Meteorology (in cooperation with the Department of Media, Communications and Journalism), and a Certificate of Special Study in Environmental Planning.  Action #6:  Master’s in City and Regional Planning. Although our efforts to develop a master’s degree in City and Regional Planning did not come to fruition, we now have an option in City & Regional Planning, and are developing a B.S. in City & Regional Planning. Our department name has also changed to Department of Geography and City & Regional Planning to better reflect our curriculum changes.  **Additional Guidelines:** If you have not fully described the assignment then please attach a copy of the questions or assignment guidelines. If you are using a rubric and did not fully describe this rubric (or the criteria being used) then please attach a copy of the rubric. If you administered a survey please consider attaching a copy of the survey so that the Learning Assessment Team (LAT) can review the questions.  Please see attached: 1) course syllabus; 2) tentative schedule; 3) homework assignments. |

CALIFORNIA STATE UNIVERSITY, FRESNO Spring 2018

Department of Geography and City & Regional Planning

GEOG 184 ENVIRONMENTAL PLANNING

Class number: 30941

Credit: 3 hours

Times/Location: Mo/We/Fr, 12:00PM - 12:50PM, Science 145

Instructor: Dr. Chihhao Wang

Email: [cwang@csufresno.edu](mailto:cwang@csufresno.edu) (**Format: G184\_Your Name**)

Office room: Science 154

Office Hours: Mo/We: 9:30AM - 11:00AM

**INTRODUCTION**

The course includes theoretical and practical components in an effort to provide students with the skills needed to critically evaluate environmental factors in the planning process. The class is generally organized into two sections: policies and practices. Policy related material covers roughly the first half of the course and the book, with practice oriented classes making up the remainder. The course is an introductory level offering. Therefore, we address a greater variety of concepts than we are able to discuss in depth. There will be some overlap and some repetition, but hopefully this will help to solidify key concepts in your mind.

**COURSE OBJECTIVES**

This course has been designed as an introduction to the incorporation of environmental considerations into land use planning and policy making. Upon completion of this course students should be able to analyze environmentally related planning problems not requiring in-depth environmental expertise and recognize when such expertise is necessary. There are four main objectives of the course:

* To familiarize students with the ethical and policy frameworks within which planners consider environmental factors;
* To provide a foundation upon which students can critically evaluate plans and environmental impact statements for their overall completeness;
* To develop an understanding of the requirements for incorporating environmental factors into the planning process as well as methods of environmental impact assessment; and
* To build upon students’ analytical presentation experience.

**TEXT AND READINGS**

Randolph, John, 2011. ‘Environmental Land Use Planning and Management”, 2nd edition. Island Press.

**COURSE REQUIREMENTS**

The final grade for the course is determined as follows:

1. Homework Assignments 40 %
2. Group Project 25 %
3. Final Exam 25 %
4. Participation 10 %

**Exam (25 points)**

There is only one in-person exam (25 points). The examinations may consist of a combination of multiple-choice, true/false, matching, short answer and/or problem-solving. The test questions are based on the materials covered in the lectures and in the textbook. Students will be given an answer sheet for the tests. Scantron is not needed. Students must take the exam in person on scheduled times. There is no makeup exam.

Students cannot wear any headgears and electronic devices when taking the exam. Only pens/pencils are allowed on the desk while the exam is in progress. The duration of the exam is the same as that of a regular class session. Students must finish the exam once they have begun the exam. Students who have not finished the exam cannot leave the classroom for any reasons or they will receive no points for the remaining unanswered questions of the exam. Students should use the bathroom before the exam. Regardless of the actual end time, the exam is considered concluded when the last student leaves the classroom.

Calculators may be used during examinations. Any calculator that is used on during an examination must be usable on a test such as the Scholastic Aptitude Test (SAT). Any calculator that has infrared (IR), Bluetooth, or wi-fi connectivity cannot be used. This includes, but is not limited to, personal digital assistants of any design, any cell-phone, or any calculator that can wirelessly connect with another device or a network. Each student shall be responsible to bring their calculator to an exam for their own use. Persons cannot share a calculator with another student. There will be no calculators provided to a student who forgets his or her calculator.

**Group Project (25 points)**

Students will be required to complete a group project by the end of the semester. The exact details will be discussed in class. Students will be graded on the appropriateness of the project, the thoroughness in which it was completed, and in the presentation of the results to the class in an academic conference format. The group project proposal will be required to present in class on **Feb 23, 2018** for review by the instructor. The proposal should be comprised of three components: 1) the problem or subject of study, 2) the anticipated goal(s) of the project, and if possible, 3) the identification of data that will be used in the analysis, which themselves may be either existing, or data that will need to be created.

**Team Peer Evaluations**: Students are expected to be serious, hard-working, and conscientious. This is why I want to be clear that I do not intend to punish anyone in this class; however, in the rare circumstances when team members do not pull their own weight effectively, this behavior punishes everyone else on their team. It is critical for you to understand the importance of working together, so please bond with every member of your team and offer equal levels of work. Professional planners work in teams so it is very important for you to learn how to collaborate.

**Homework assignments (40 points)**

**Five (5)** homework assignments will be distributed one week prior to their due dates. The grade for late homework assignments will decrease by **1 point** per calendar day overdue.

**Participation (10 points)**

Attendance will be taken on an irregular basis. I will randomly take attendance 10 times throughout the semester.

**Grading**

Your final grade will be determined by the percentage of points you earn, based upon the following scale. There is no grading curve. Success in this course depends entirely on your own efforts:

100 – 90 = A (outstanding achievement, well above the level necessary to meet course requirements)

89 – 80 = B (achievement that is above the level necessary to meet course requirements)

79 – 70 = C (achievement that meets the basic course requirements)

69 – 60 = D (achievement that is worthy of credit even though it does not fully meet the basic course requirements)

< 60 = F (failure to satisfy basic course requirements)

**I** (Incomplete) - a student will earn the incomplete grade when he or she has completed more than two thirds of the course work and is passing.

**UW** (Unauthorized Withdrawal) - this is assigned when a student just disappears from the course without withdrawing officially.

I reserve the right to make minor adjustments in examination scores (in the class' favor) depending on the overall performance of the class on a given examination. However, students should not rely upon any minor adjustment to save their grade as there may not be any adjustments made! The University considers a "C" to be average and should not be equated with failure, because it is not failure. This statement does not mean that one should not strive for high achievement; it simply means that the "bar of performance" will not be lowered to make it easier to "leap over the bar".

The total points students will obtain from this class will be based solely on the course requirements specified above. No other bonus points or extra work will be considered. Only scores, not grades, will be given to the tests, exercises, presentation, and the paper throughout the semester. It is the responsibility of students to keep track of their scores posted on Bb and use the information to plan for a better grade. The scores for a particular portion are concluded one week after the end of that portion. They become non-negotiable afterward. Act accordingly and do not negotiate or ask for points toward the end of the semester. Fairness in scoring is central to the proper conduct of this course.

Only under extenuating circumstances (e.g. military assignment, jury duty, hospital stay with doctor’s note) would an “I” grade be awarded. Under such circumstances student must meet the university requirements (at least 2/3 of course work completed and has a passing grade) and must inform the instructor in writing before the last day of instruction, or they will receive a “WU” or “F” grade. For students with an “I” grade, incomplete assignments in question will be subject to a penalty of a 10% of original score per month policy. Students are urged to avoid taking incompletes or to submit incomplete assignments as soon as possible. Student must finish their incomplete assignments/tests within one year of receiving the “I” grade. Failing to do so will result in “F” grade.

**University Policies**

**Students with Disabilities**

Upon identifying themselves to the instructor and the university, students with disabilities will receive reasonable accommodation for learning and evaluation. For more information, contact Services to Students with Disabilities in University Center, Room 5 (Telephone 278-2811).

**Honor Code**

“Members of the CSU Fresno academic community adhere to principles of academic integrity and mutual respect while engaged in university work and related activities.” You should:

1. understand or seek clarification about expectations for academic integrity in this course (including no cheating, plagiarism and inappropriate collaboration)
2. neither give nor receive unauthorized aid on examinations or other course work that is used by the instructor as the basis of grading.
3. take responsibility to monitor academic dishonesty in any form and to report it to the instructor or other appropriate official for action.

**Please note that students will be required to sign a statement at the end of all exams and writing assignments that “I have done my own work and have neither given nor received unauthorized assistance on this work.”**

**Cheating and Plagiarism**

Cheating and plagiarism are not condoned. The university policy will be addressed if they occur. "Cheating is the actual or attempted practice of fraudulent or deceptive acts for the purpose of improving one's grade or obtaining course credit; such acts also include assisting another student to do so. Typically, such acts occur in relation to examinations. However, it is the intent of this definition that the term 'cheating' not be limited to examination situations only, but that it include any and all actions by a student that are intended to gain an unearned academic advantage by fraudulent or deceptive means. Plagiarism is a specific form of cheating which consists of the misuse of the published and/or unpublished works of others by misrepresenting the material (i.e., their intellectual property) so used as one's own work." Penalties for cheating and plagiarism range from a 0 or F on a particular assignment, through an F for the course, to expulsion from the university. For more information on the University's policy regarding cheating and plagiarism, refer to the Class Schedule (Legal Notices on Cheating and Plagiarism) or the University Catalog (Policies and Regulations).

**Please be advised that I practice a zero-tolerance for such behavior.**

**Disruptive Classroom Behavior**

"The classroom is a special environment in which students and faculty come together to promote learning and growth. It is essential to this learning environment that respect for the rights of others seeking to learn, respect for the professionalism of the instructor, and the general goal of academic freedom, are maintained. Differences of viewpoints or concerns should be expressed in terms which are supportive of the learning process, creating an environment in which students and faculty may learn to reason with clarity and compassion, to share of themselves without losing their identities, and to develop an understanding of the community in which they live. Student conduct which disrupts the learning process shall not be tolerated and may lead to disciplinary action and/or removal from class." The following will not be allowed in the classroom:

1. Disruptive behavior (e.g. talking in class, calling out, unwarranted comments etc.).
2. Newspapers may be read before class, but MUST be put away once class begins.
3. Work from other classes cannot be done during lecture.
4. The use of electronic devices including, but not limited to: network browsing during lecture, cell phones, music and/or video players of any kind is not allowed at any time. – Please turn off all electronic devices and put them away before class begins. Exceptions will be made on a case-by-case basis.
5. Any student whose cell-phone rings during class will lose five (5) points for each occurrence. Students who use an electronic device without prior permission will lose ten (10) points for each occurrence.

**Copyright policy:**

Copyright laws and fair use policies protect the rights of those who have produced the material. The copy in this course has been provided for private study, scholarship, or research. Other uses may require permission from the copyright holder. The user of this work is responsible for adhering to copyright law of the U.S. (Title 17, U.S. Code).To help you familiarize yourself with copyright and fair use policies, the University encourages you to visit its copyright web page.

http://www.lib.csufresno.edu/libraryinformation/campus/copyright/copyrtpolicyfull.pdf

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**Important Statements**

Subject to Change Statement: This syllabus and schedule are subject to change in the event of extenuating circumstances. If students are absent from class, it is students' responsibility to check on announcements made while absent. By enrolling in this course students agree to the terms and conditions stated in this syllabus and the related changes announced on Bb throughout the semester.

**COURSE OUTLINE**

The tentative course outline is below.

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| --- | --- | --- |
| **Week** | **Topic/Reading** | **Note** |
| 1/15 | Introduction |  |
| 1/22 | Management and Planning (Ch. 1&2) |  |
| 1/29 | Land-Use Planning and Participation (Ch. 3&4) |  |
| 2/5 | Geospatial Analysis (Ch. 5) | 2/5 Team building |
| 2/12 | Soil and Land Use (Ch. 6) | 2/14 Group meeting |
| 2/19 | Water and Land Use (Ch. 7) | 2/19 No class, 2/23 P1 (Topic) , HW1 due |
| 2/26 | Stormwater Management (Ch. 8) | 3/2 Group meeting |
| 3/5 | Groundwater Management (Ch. 9) | 3/9 HW2 due |
| 3/12 | Urban Ecology (Ch. 10) | 3/16 Group meeting |
| 3/19 | Urban Diversity (Ch. 11) | 3/19 HW3 due; 3/23 Group meeting |
| 3/26 |  | Spring Break |
| 4/2 | Climate Change (Ch. 12) | 4/6 Geo Bee (no class) |
| 4/9 | Natural Hazards (Ch. 13) | 4/12 Water event |
| 4/16 | Natural Hazard Mitigation (Ch. 14) | 4/16 P2 (Data); 4/20 HW4 due |
| 4/23 | Land Conservation and Design (Ch. 15&16) | 4/27 Group meeting |
| 4/30 | Smart Growth (Ch. 17&18) | 5/4 HW5 due |
| 5/7 | Integrative Management of Ecosystems (Ch. 19) | 5/9 Last day of instruction, P3 (final presentation) |
| 5/14 | Final week |  |

P: Presentations

CALIFORNIA STATE UNIVERSITY, FRESNO Spring 2018

Department of Geography and City & Regional Planning

**GEOG 184 Environmental Planning**

**Homework Assignment 2 (8 pts)**

**Due day: March 5, 2018**

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. If the map scale is **1:12,000**, contour lines are given for every **40 feet** of elevation, and a certain area shows **6 contour intervals** (one contour interval per inch), what is its percent slope?
   * The site slope around Science 1 at CSU Fresno is 3%, and the site is 250 feet long. To control erosion, two management factors are considered: concrete pavement and established native grass (i.e. C and P factors). Estimate the potential for annual soil loss in tons that might result after the two management factors are implemented respectively (hint: use the information in the slides).
   * Calculate the Erodibility Index for the site. Would you categorize the site as Highly Erodible Land (HEL) or Non-highly Erodible Land (NHEL)?
   * What measures would you **suggest** among the two management factors (or any other) to reduce the soil erosion potential?
2. How does it feel to be an Environmental Planner on campus? For this exercise, you will be doing a “walk audit” for specific areas of campus. A Walk Audit is a diagnostic tool used to assess the environment of a small area of interest. The audit is originated from pedestrian design and usually conducted by an expert, who leads residents, traffic engineers, and others on a walk and points out deficiencies such as missing sidewalks or curb ramps, obstacles, and dangerous street crossings. Walk audits can be extended to observe environmental problems for a small area. This is a simple but powerful tool, especially for planners and other decision-makers who make environmental decisions without actually experiencing the physical environment on foot.

**Land use properties of soil**

* Soil stability
* Drainability
* Erodibility
* Capacity
* Wetland soils

**The most common environmental issues discovered on Walk Audits are:**

* Earthquake?
* Flooding?
* Water pollution?
* Waste landfilling?
* Erosion?
* Urban heat island?

You will critically analyze buildings, construction, and facilities around campus and pick up one or two that, you think, would have potential environmental issues. Describe the site observed with pictures and explain what environmental issue the site might have. Propose an innovative solution for a new way to help with the environmental issue. This is not an easy exercise, and it requires you to think creatively. Please take at least 30 minutes to come up with your solution.

CALIFORNIA STATE UNIVERSITY, FRESNO Spring 2018

Department of Geography and City & Regional Planning

**GEOG 184 Environmental Planning**

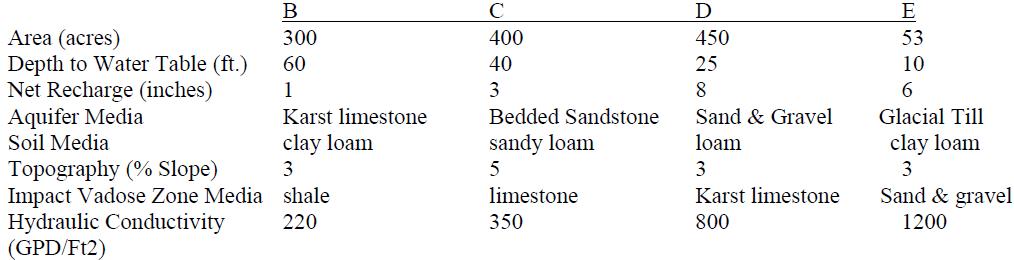
**Homework Assignment 4 (8 pts)**

**Due day: April 27, 2018**

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Questions:** As a county planner outside a city which depends on groundwater for water supply, you are concerned about the potential for ground water contamination. Both city and county residents have requested that you apply the **DRASTIC method to evaluate groundwater pollution potential** in an **agricultural area** bounded by the city. The county contains **four** different hydro-geological settings having the characteristics given in the table below.

1. Using the DRASTIC procedure, **compute scores for each subarea and compare them** in terms of potential for land-use induced groundwater contamination. You should calculate the DRASTIC scores for **both baseline and, given the land use, for the agricultural or pesticide assigned weights**. Use the tables found in Randolph for ratings and weights (and explain any assumptions you make, especially if you do not use typical ratings).



1. Comment on **the procedure and the usefulness** of the results.
2. What **additional steps** would you suggest that the county take to protect groundwater?

CALIFORNIA STATE UNIVERSITY, FRESNO Spring 2018

Department of Geography and City & Regional Planning

**GEOG 184 Environmental Planning**

**Homework Assignment 5 (8 pts)**

**Due day: May 4, 2018**

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Questions:**

1. Frequent flood damages are a problem in the Town of Highwater, an urbanizing community along the Fuller River 10 miles upstream from the City of Lowater. About half of the land within the Town limits is developed and about half is in forest and farmland but this area is poised for development.
2. The following three alternatives have been suggested for dealing with the current and future flooding problems in both communities. As an environmental planning consultant you have been asked (A) to comment on one or two "pros" (advantages) and "cons" (limitations) of the three alternatives, and (B) to give your recommendation, which need not be limited to the three options.

A. Comment on alternatives: Pros Cons

* Flood plain zoning through Highwater:
* Build levee to protect existing development in Highwater:
* Widen river channel through Highwater to improve drainage:

B. What would you recommend to the Town? (not limited by the above alternatives)

* (Hint: consult with Internet and chapters 13 and 14)

**Reminder:**

The answers must be in depth and thoughtful. Please see this HW as a practice for your final exam!